Solar Probe Status

Portions of presentation
2000 June 14 by
Dr. Madhulika Guhathakurta, Program Scientist
at the Sun-Earth Connection Advisory Subcommittee (SECAS)
meeting at NASA Headquarters

Note: In the event of differences between information here and in the Deep Space Systems AO, information in the AO and its update and Q&A Web sites should be used for proposal purposes.

Solar Probe Instrument Selection

- Solar Probe instrument proposals are due July 6, 2000.
- Instrument selection will occur in Fall/Winter 2000.

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Solar Probe Technology & Definition

(Page 1 of 2)

Radiation Modeling

- Particles Near the Sun workshop held 3/12-14/2000 in Atlanta, Georgia. Invitees from UC Berkeley, U. Alabama, Marshall Space Flight Center, Naval Research Laboratory, U. Colorado, Germany, Spain, and JPL Radiation Environment Group participated.
  - Resultant white paper "Radiation Environment Near the Sun: Solar Probe" posted on the Web.
  - The new results have been used to update the SP radiation guidelines.
  - The near-Sun radiation environment does not seriously impact spacecraft design.

Shield/Antenna

- Received final report on NASTRAN Carbon-Carbon shield analysis from SAIC, Houston (2/21/2000).
  - New tetrahedron support structures, with 1mm thick parabolic shell; new config posted on Web.
- Received final report from Lockheed Martin Astronautics (Denver) on RF test results (3/29/2000).
  - No significant loss (<0.1dB) in reflectivity up to 1300 K; further testing to be done.
  - RFP for shield/antenna design and fabrication to be issued November 2000.

Feed

- High temperature feed material development at Composite Optics, Inc., San Diego (3/21/2000).
  - Delivery of proof-of-concept ceramic feed (due March 2001).
  - RF testing at JPL in April 2001.

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Solar Probe Technology & Definition

(page 2 of 2)

Telemetry Experiments During Conjunctions

- Cassini solar conjunction experiment on 5/12/2000.
  - Successfully acquired carrier and telemetry channel recordings at 2.5 R_S.
- MGS conjunction experiment planned for 7/1/2000.
- Goal is to determine if higher near-perihelion telemetry rates can be supported; no plan to change rate for AO/Mission & Project Description.

Mission Design

- Maneuver defined which, if verified and adopted, would permit second perihelion to be at quadrature, allowing real-time downlink (as with first perihelion).
  - Risk of maneuver remains to be assessed.
  - Will be considered further as spacecraft design matures and launch system margins better defined.
  - AO/Mission & Project Description remains stored-only data for second perihelion.

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